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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,297	06/01/2006	Yasuyuki Kenmoku	291280US3PCT	3688

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ALEXANDRIA, VA 22314

EXAMINER

WEDDLE, ALEXANDER MARION

ART UNIT	PAPER NUMBER
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1792

NOTIFICATION DATE	DELIVERY MODE
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12/29/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/581,297	Applicant(s) KENMOKU ET AL.	
	Examiner ALEXANDER WEDDLE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/01/2006, 08/17/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: the claim lacks a transition word, such as “comprising,” and the process steps are not clearly expressed (e.g., “dividing into ... coating by different sprayer units ... reciprocating along ...”).
2. Claim 5 is objected to because of the following informalities: the word “is cut” recited at line 4 should be replaced with “is turned off,” or the like. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krogedal et al. (US 7,429,298) in view of Baba et al.(JP 06262564).

Krogedal et al. (US'298) teaches a coating method providing conveying means (col. 3, lines 1-3) for conveying an object to be coated in a predetermined direction, and a plural number of sprayer units mounted on one of the surrounding walls of the booth and not necessarily on the opposite wall (Fig. 5, elements 7-10; col. 4, lines 32-49; col. 5, lines 33-34; Claims 1-2 and 4, col. 6, lines 2-29 and 50-54). US'298 teaches that more robots can be added as needed (col. 5, lines 8-12). Painting robots follow the object to be painted continuously moving through the booth (col. 3, lines 32-35). US'298 teaches that the coating surface of the object to be coated is divided into a plural number of coating areas (e.g., "half the car"), and adjacent coating areas of said plural number of coating areas are respectively coated by different sprayer units, since normally each of the two painting robots are arranged for painting half of an object (col. 3, lines 14-15). Individual sprayer units perform coating while reciprocating along said

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coating areas substantially parallel to the conveying direction of the object (“horizontal strokes”) (col. 5, lines 42-46).

The recitation of “a plural number of sprayer units is arranged at intervals in the conveying direction of said conveying means” is in the preamble. Please consider the following: “A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to standalone. *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976)” US'298 discloses that such an arrangement is known in the prior art.

US'298 fails to teach that coating is performed while forming a coating trajectory of said turning paths like a series of steps. Baba et al. (JP 06262564) teaches a method for programming (“teaching”) a coating robot (Abstract). Two painting robots are stationed on opposite sides of the object (e.g., automobile) (par. 0005) and the order of painting from one robot is used to teach in mirror image the opposing robot, such that the point at which one robot stops painting is the point at which the other robot starts or ends so that the robots can operate cooperatively (pars. 0013-0014). Coating is performed while performing a trajectory of turning paths like a series of steps or a zig-zag pattern (Abstract; Drawings 2-3, elements 100-112, pA1-pA6; par. 0021). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 by performing a trajectory of turning paths like a series of steps, because JP'564 suggests that such a trajectory is useful for coating a panel such

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as the body of a car (par. 0035) while shortening the time for one robot to teach the next robot where to paint (Abstract).

US'298 in view of JP'564 teaches a method of teaching multiple robots to cooperate in coating an object in a zig-zag or stepwise manner (Abstract; par. 0021; pars. 0013-0014; Drawings 2-3, elements 100-112, pA1-pA6). US'298 in view of JP'564 fails to teach that the positions of turning paths for reciprocation, located at a boundary between adjacent coating areas, are sequentially shifted from the front side to the rear side in the conveying direction of the object. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 in view of JP'564 to program the robots to sequentially shift the positions of turning paths for reciprocation from the front side to the rear side in the conveying direction of the object; as the object is conveyed forward, it would have been obvious to such person that the turning position during the coating by a first robot (Application, Fig. 2, Ta0) would have to shift to the rear, because of limitations to the reach of the first robotic reciprocating arm, and that a second robot would be programmed or taught to pick up where the first robot left off in order to achieve improved coverage of a large object which is moved on a conveyor.

Regarding Claim 2, US'298 in view of US'564 fails to teach performing the coating from front side to rear side in the conveying direction such that coating starts at starting positions at a first parallel transit path and performing the coating from front side to rear side in the conveying direction such that coating ends at end positions along a last parallel transit path. Coordinates for start and end positions are result-effective

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variables because they affect the ability of adjacent robots to cooperate in the coating process and the time required to travel from end position to the starting position of the next round of coating. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 in view of US'564 by determining optimal coordinates for start and end positions as a result of routine optimization.

Regarding Claim 3, US'298 in view of US'564 discloses that it was known in the prior art to align the sprayer units substantially linearly in said adjacent coating areas in the adjacent coating areas, demonstrated by the robotic sprayers lined along the sides of the conveyor (Fig. 3) and that the coating occurs in a horizontal direction in a series of steps or zig zags (see Claim 1 rejection above). US'298 in view of US'564 fails to teach that the transit paths of the sprayer units are aligned substantially linearly in said adjacent coating areas. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 in view of US'564 by aligning the parallel transit paths substantially linearly in said adjacent coating areas, because such person would have recognized that so aligning the paths provides the benefit of smoother continuous coating, similar to long strokes.

Regarding Claim 4, US'298 in view of US'564 fails to disclose that coating is performed in a manner that the positions of terminal ends of parallel transit paths in one direction for said reciprocation of said sprayer units and start ends of parallel transit paths in the return direction are shifted from the front side to the rear side in said conveying direction of said object. The claim is broad enough to read on transit paths

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whose terminal ends shift either relative to the object, because of the movement of the object even when transit paths have equal lengths (i.e., the strokes are of equal length) or relative to the body of the robot device, such that the sprayer units must move closer to or farther away from the body of the robot device on successive strokes. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 in view of US'564 to shift the positions of the terminal ends of parallel transit paths on the object by maintaining a constant length of successive transit paths, or stroke lengths, because constant lengths would provide less complex programming. Furthermore, it would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'298 in view of US'564 to shift the positions of the terminal ends of parallel transit paths in order to avoid wasting paint, such as when the position of the rear terminal end would otherwise be off the rear end of the object having moved forward and to avoid overlapping with the transit path of an adjacent robot in the conveying direction of the object.

Regarding Claim 5, US'298 suggests that the spray is cut (i.e., "turned off") at the end of a stroke or at the end of a transit path (col. 3, lines 44-46). US'298 in view of US'564 fails to teach that the coating is turned off at said turning paths for the reciprocation of the sprayer unit. It would have been obvious to a person of ordinary skill in the art at the time of invention modify the process of US'298 in view of US'564 by turning off the sprayer unit during the reciprocation of the sprayer unit at the turning path, because such person would have recognized that spraying during reciprocation

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would result in a coating streaky with vertical strokes and an accumulation of paint at the ends of the transit paths.

Claims 1-5 are *prima facie* obvious absent evidence to the contrary.

Conclusion

8. No claim is allowed.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Greene et al. (US 6,836,700), Harlow, Jr. et al. (US 5,645,884), Milojevic et al. (US 2003/0045967), and Morton (US 2005/0196543).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is (571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. W./

Examiner, Art Unit 1792

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1792